AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-34. (canceled)

35. (currently amended) A method for the production of a biomolecular complex, said method comprising the steps of:

i) ~~synthesis of~~ synthesizing a molecular combination of a first functional element (FE_1) and a first binding element (BE_1), BE_1 comprising a nucleotide sequence that binds to a first target molecule or area (T_1), and forming a stock solution of the molecular combination FE_1-BE_1,

ii) ~~synthesis of~~ synthesizing a molecular combination of FE_1 and a second binding element (BE_2), BE_2 comprising a nucleotide sequence that binds to a second target molecule or area (T_2), and forming a stock solution of the molecular combination FE_1-BE_2,

iii) ~~synthesis of~~ synthesizing a molecular combination of a second functional element (FE_2) and BE_1, and forming a stock solution of the molecular combination FE_2-BE_1,

iv) ~~synthesis of~~ synthesizing a molecular combination of FE_2 and BE_2, and forming a stock solution of the molecular combination FE_2-BE_2,

v) ~~synthesis of~~ synthesizing a linker molecule (L) comprising T_1, T_2 and a nucleic acid connecting T_1 and T_2, L ~~and~~ having a pre-determined physical property, and

vi) reacting ~~the linker molecule L with~~ the molecular combination of steps i) and iv), or the molecular combination of steps ii) and iii), with L to obtain self-assembly of the molecular combinations ~~to the linker molecule L~~ in a desired configuration in solution, to produce said biomolecular complex ~~comprising FE_1 and FE_2~~, wherein each of FE_1 and FE_2 is attached to one of BE_1 and BE_2, each of BE_1 and BE_2 is ~~attached~~ bound to one of T_1 and T_2, and T_1 and T_2 are connected to each other by L $(FE_1/FE_2)-(BE_1/BE_2):T_1-L-T_2:(BE_1/BE_2)-(FE_1/FE_2)$ ~~(FE-BE-T_1-L-T_2-BE-FE)~~.

36. (currently amended) The method according to claim 35, further comprising ~~synthesis of~~

synthesizing at least one second linker molecule (l) ~~connecting FE_1 or FE_2 with BE_1 or BE_2~~ that connects FE_1/FE_2 with BE_1/BE_2, and

reacting ~~the second linker molecule~~ l in step vi) to produce ~~the~~ a biomolecular complex wherein at least one of FE_1 ~~or~~ and FE_2 are attached to at least one of BE_1 ~~or~~ and BE_2 through ~~the second linker molecule~~ l $(FE_1/FE_2)-l-(BE_1/BE_2)$ ~~(FE-l-BE)~~.

37. (previously presented) The method according to claim 36, wherein the second linker molecule l is a nucleic acid polymer having a pre-determined physical property.

38. (currently amended) The method according to claim 35, further comprising repeating steps i) – iv) for functional elements other than FE_1 and FE_2, and binding elements other than BE_1 and BE_2, and

forming a library of separate stock solutions of the molecular combinations of steps i) – iv), ~~and~~ wherein in step vi) L is reacted with the at least two of the molecular combinations from the library of stock solutions.

39. (currently amended) A method for the production of a biomolecular complex, said method comprising:

(a) providing separate solutions of different first functional elements (FE_1), each FE_1 adapted to specifically attach to a first binding element (BE_1), and BE_1 adapted to specifically attach to a first target molecule or area (T_1),

(b) providing separate solutions of different second functional elements (FE_2), each FE_2 adapted to specifically attach to a second binding element (BE_2), and BE_2 adapted to specifically attach to a second target molecule or area (T_2),

(c) providing separate solutions of said binding elements BE_1 and BE_2, each binding element comprising a nucleotide sequence,

(d) providing separate solutions of linker molecules (L), each linker molecule comprising a nucleic acid molecule having a distinct physical property,

(e) reacting FE_1 of step (a) with at least one of BE_1 and BE_2 of step (c) to form a first functional element/binding element combination FE_1-(BE_1/BE_2) ~~(FE_1-BE)~~,

(f) reacting FE_2 of step (b) with at least one of BE_1 and BE_2 of step (c), other than the binding element used in step (e), to form a second functional element/binding element combination FE_2-(BE_1/BE_2) ~~(FE_2-BE)~~,

(g) optionally, separately repeating steps (e) and (f) for each of said first functional elements and said second functional elements,

(h) reacting each linker molecule L from step (d) with T_1 and T_2, each of T_1 and T_2 comprising a target sequence capable of specific binding to BE_1 and BE_2 of steps (e) and (f),

(i) reacting ~~FE_1-BE and FE_2-BE~~ FE_1-(BE_1/BE_2) and FE_2-(BE_1/BE_2) of steps (e) and (f) with each linker molecule L reacted with T_1 and T_2 of step (h) to form a combination of functional elements attached to binding elements and target molecules ~~(FE_1-BE-T_1-L-T_2-BE-FE_2)~~ FE_1-(BE_1/BE_2):T_1-L-T_2:(BE_1/BE_2)-FE_2, and

(j) repeating steps (h) and (i) in order to form a library of combinations of functional elements attached to binding elements and target molecules ~~(FE-BE-T-L-T-BE-FE)~~,

to produce said biomolecular complex comprising FE_1 and FE_2, wherein:

FE_1 is specifically attached to a binding element, and the binding element is specifically attached to T_1,

FE_2 is specifically attached to a binding element, and the binding element is specifically attached to T_2, and

T_1 and T_2 are attached by at least one linker molecule (L).

40. (previously presented) The method according to claim 39, wherein L further comprises a marker or label chosen among a reporter gene, a radioactive label, and a fluorescent label.

41. (previously presented) The method according to claim 39, wherein at least one of BE_1 and BE_2 comprise peptide nucleic acids (PNA) sequences.

42. (previously presented) The method according to claim 39, wherein FE_1 and FE_2 are chosen among a natural or synthetic peptide, a lipid, a glycoprotein, a receptor ligand, and a fraction thereof, or any combination thereof.

43. (currently amended) The method according to claim 39, wherein in at least one of steps e) and f) at least one of FE_1 and FE_2 is attached to BE_1 or BE_2 through a second linker molecule (l) (FE_1/FE_2)-l-(BE_1/BE_2).

44. (previously presented) The method according to claim 43, wherein the second linker molecule l is a nucleic acid polymer having a pre-determined physical property.